Efficacy Review

Date: April 18, 2011

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Risk Manager Rev.: BeWanda Alexander

Products: F6139-2 Insecticide

EPA Reg. #: 279-OLLE

A.I.'s: Bifenthrin (0.20%), Zeta-Cypermethrin (0.05%)

Decision #s: 441016

DP #s: 384122

Submission: R310, New Product; Non-Fast Track, Includes RD Science Review

MRIDs: Submitted: 48261004

Cited: 44021901, 44137401, 44137402, 44891902, 46508101, 46566201, 47361711, 47385709, 48101601

MRID 44021901

Title: Efficacy of Broadcast Applications of Bifenthrin Granular Formulations for Imported Fire Ant Control in Turfgrass and Electrical Transformers

Materials and Methods: Various

Guideline: OPPTS 810.3100

Study Summary of the Results:

The MRID summarizes a number of USDA and University studies that evaluated various Bifenthrin 0.2% granular products at various use rates and conditions. Alate queens were controlled 4 months after application of granules at the rate of 0.25 lbs ai/acre.

Entomologist's Observations/Discussion:

1. Claims are adequately supported for mound drench sites/directions, and for broadcast applications at rates at or above 0.25 lbs ai/acre, and for pad mounted electrical sites. A four month residual control claim is supported.

MRID 44137401

Title: Efficacy of Broadcast applications of Bifenthrin Liquid and Granular Formulations for Deer Ticks (*Ixodes sp.*) Control in Turfgrass

Materials and Methods: Bucket test with bermudagrass sod that was treated at the rate of 0.2 and 0.4 lb ai/acre, and watered in with the equivalent of ½" of rain. Deer tick nymphs were added to the arena and exposed for 48 hours. Chlorpyrifos was used as a positive control.

Guideline: OPPTS 810.3500

Study Summary of the Results:

Both rates provided 100% control of deer ticks

Entomologist's Observations/Discussion:

1. Claims for Deer Ticks (or "Ticks, including ticks that may transmit Lyme Disease") are adequately supported.

MRID 44137402

Title: Efficacy of Broadcast applications of Bifenthrin Liquid and Granular Formulations for American Dog Tick (*Dermacentor variabilis*) Control in Turfgrass

Materials and Methods: Bucket test with bermudagrass sod that was treated at the rate of 0.2 and 0.4 lb ai/acre, and watered in with the equivalent of ½" of rain. American Dog Ticks (adults and nymphs_ were added to the arena and exposed for 48 hours. Chlorpyrifos was used as a positive control.

Guideline: OPPTS 810.3500

Study Summary of the Results:

Both rates provided 100% control of deer ticks

Entomologist's Observations/Discussion:

1. Claims for American Dog Ticks (or "Ticks, including ticks that may transmit Rocky Mountain Spotted Fever") are adequately supported.

MRID 44891902

Title: Efficacy of Broadcast Applications of Bifenthrin Liquid and Granular Formulations to Turfgrass for Cat Flea Larval and Adult Control

Materials and Methods: Field trial (arena not specified), where fleas were exposed to treated turfgrass 1 day after application. Sod was treated at the rate of 0.2 and 0.4 lb ai/acre.

Guideline: OPPTS 810.3500

Study Summary of the Results:

Both rates provided 100% control of fleas 1 day and 7 days after treatment

Entomologist's Observations/Discussion:

1. Control claims are supported for fleas (adults and larvae), but should be qualified to say 'control for up to 7 days.'

MRID46508101

Title: Efficacy of FMC 54800 Granular Pesticide for Control of Scorpions

Entomologist's Observations/Discussion:

1. Claims against scorpions are supported by this data, which was previously reviewed and accepted by the Agency. As the Agency works to update product performance guidelines and standards for support of residual control claims, additional residual efficacy data on scorpions and other pests may be required in the future of products bearing such claims.

MRID46566201

Title: Evaluation of Efficacy of Lawn Insect Control Granules Against Multiple Insects/Arthropods

Materials and Methods: Field studies were conducted using PVC arenas driven into plot areas, where bifenthrin (0.2 lb ai/acre) treatments were assessed at 30, 60, and 90 days after initial treatment with granules. A similar study was conducted indoors, using soil filled arenas, and efficacy assessed at 30, 60, 90, and 120 days after treatment with bifenthrin granules. Exposure durations for arthropods were not described.

Study Summary of the Results:

1. Field efficacy against Harvester ants exceeded 94% through 90 days after initial treatment of outdoor field plots.
2. Laboratory efficacy against Scorpions, Black widow spiders, and Brown recluse spiders was 100% through 120 days after initial treatment of indoor lab arenas.
3. Harvester and efficacy was adequate through 90 days after initial treatment of indoor lab arenas.

Entomologist's Observations/Discussion:

1. Because exposure duration of arthropods to treated surfaces was not specified it is not possible to determine if the submitted data are adequate to support any residual claims against the listed pests.

MRID 47361711

Title: Efficacy of Zeta-cypermethrin for Control of Variety of Public Health Pests

Materials and Methods: Various

Guideline: OPPTS 810.3500

Study Summary of the Results:

N/A

Entomologist's Observations/Discussion:

1. Studies evaluating Fire ant mound and broadcast data are provided, but efficacy results are superseded by the superior performance observed in the aforementioned bifentrhin studies, MRID 44021901..

MRIDs 47385709, 48101601

Entomologist's Observation/Discussion:

1. These studies were previously reviewed and accepted by the Agency in support of claims for use against fire ant mounds. As the Agency works to update product performance guidelines and standards for support of residual control claims, additional residual efficacy data on fire ants, and other such pests may be required in the future for products bearing such claims.

MRID 48261004

Title: F6132 G Efficacy against Carpenter Ants

Materials and Methods: A laboratory study was conducted to evaluate the efficacy of a bifenthrin/zeta-cypermethrin combination granule for residual control of Carpenter Ants (*Camponotus modoc*) collected from a wild population in Washington. Efficacy was compared to bifenthrin alone, in support of enhanced efficacy for the combination of active ingredients. A filter paper assay was conducted, where granules were added to moistened filter papers in a test arena. A soil assay was also conducted where a sand/soil (50:50) substrate was used instead of filter paper. 2 replicates of 10 ants (mixed sex, age unknown) were used for each substrate. There was no untreated control group. Speed of kill was measured by the time required to kill 90% of the exposed ants.

Study Summary of the Results:

1. For the filter paper assay, 90% of ants were killed within 5 minutes when exposed to the combined granule, in comparison with 42 minutes on the bifenthrin-only granule.
2. For the soil assay, 90% of ants were killed within 10 minutes when exposed to the combined granule, in comparison with 42 minutes for the bifentrhin-only granule.

Entomologist's Observations/Discussion:

1. While this study was not adequate to support specific pest claims (inadequate replication, no control group, inadequate description of the test species, etc.), this data is adequate to demonstrate that the combination of bifenthrin and zeta-cypermethrin imparts an efficacy benefit, in terms of the speed of kill against insects exposed to residues of the proposed granular product.

Overall Review of Label Claims from all Cited Studies:

1. Claims against fire ants, deer ticks, dog ticks, and fleas (larvae and adults) are supported as listed above in the study reviews. Control duration claims for fire ants are adequate to support 4 months in the Directions for Use.
2. The applicant submitted efficacy data to demonstrate that speed of kill is improved by the combination of bifenthrin and zeta-cypermethrin for control of Carpenter Ants. This data is adequate to justify the efficacy benefit of this combination of active ingredients.

Line by Line Review of Label Efficacy Claims:

Pests in Rate Tables for residual control:

Ants (except Carpenter and Pharaoh Ants), Imported Fire Ants (adults), Fleas (larvae & adults), Scorpions, Ticks: Acceptable

SPECIFIC PEST INSTRUCTIONS:

Fleas (adults and larvae): Control is provided for up to seven days . . . . : Acceptable

Imported Fire Ants: Control will be optimized . . . .: Acceptable

Scorpions: To ensure optimum control, treat . . . .: Acceptable

Ticks (Including ticks that may transmit Lyme Disease and Rocky Mountain Spotted Fever): Do not make spot applications. Treat the entire area . . . .: Acceptable

Deer ticks (*Ixodes sp.*) have a complicated life cycle that . . . .: Acceptable

American dog ticks may be a considerable nuisance in suburban settings, particularly . . . .: Acceptable

SPOT TREATMENT APPLICATIONS:

Broadcast and Spot Applications: For the control of actively foraging ants (including Imported Fire Ants) broadcast uniformly 2.3 to 4.6 lbs . . . .: Acceptable

Pad Mounted Electrical Sites: To reduce or prevent ant mound building activity on electrical pads, uniformly distribute 1.0 to 1.5 Tablespoons . . . .: Acceptable